CLAIMS

1. An antibody or antigen-binding fragment thereof that binds to an extracellular localized epitope of Hsp70 on tumor cells.

2. The antibody of claim 1, wherein said tumor is a human tumor selected from the group consisting of colon, lung, stomach, prancreas, head and neck, ovary, and/or breast cancer, melanoma, glioblastoma, sarcoma and or leukemia such as AML, ALL, MDS or blastocytoma.

3. The antibody of claim 1 or 2, wherein said epitope comprises or consist of the amino acid sequence NLLGRFEL (SEQ ID NO: 1) or TKDNNLLGREFLSG (SEQ ID NO: 2).

4. The antibody of any one of claims 1 to 3, which is a monoclonal antibody.

5. The antibody of claim 4, which is monoclonal antibody cmHsp70.1 as produced by hybridoma cmHsp70.1, deposited with the DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH, Mascheroder Weg 1b, D-38124 Braunschweig, Germany on November 14, 2003, and assigned Accession Number DSM ACC2629, or cmHsp70.2 as produced by hybridoma cmHsp70.2, deposited with the DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH on November 14, 2003, and assigned Accession Number DSM ACC2630.

6. An antibody or antigen-binding fragment thereof that competes with an antibody of claim 5 for binding to an extracellular localized epitope of Hsp70 on human tumor cells.

7. The antibody or antigen-binding fragment of any one of claims 1 to 6, which is capable of exhibiting an inhibitory effect on the cytolytic activity of NK cells against Hsp70 expressing tumor cells.

8. The antibody of any one of claims 1 to 7, which is a human, humanized, xenogeneic, or a chimeric human-murine antibody.

9. The antigen-binding fragment of any one of claims 1 to 8, which is selected from the group consisting of a single chain Fv fragment, an F(ab') fragment, an F(ab) fragment, and an $F(ab')_2$ fragment.

10. A hybridoma that produces a monoclonal antibody of any one of claims 1 to 9.

11. The hybridoma of claim 10, selected from the group consisting of hybridoma cmHsp70.1, deposited with the DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH, Mascheroder Weg 1b, D-38124 Braunschweig, Germany on November 13, 2003, and assigned Accession Number DSM ACC2629, and cmHsp70.2, deposited with the DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH on November 14, 2003, and assigned Accession Number DSM ACC2670.

12. A polynucleotide encoding at least a variable region of an immunoglobulin chain of the antibody of any one of claims 1 to 9.

13. The polynucleotide of claim 12, wherein said variable region comprises at least one complementarity determining region (CDR) of the V_H and/or V_L of the variable region of the antibody of claim 6.

14. A vector comprising the polynucleotide of claim 12 or 13, optionally in combination with a polynucleotide of claim 12 or 13 that encodes the variable region of the other immunoglobulin chain of said antibody.

15. A host cell comprising a polynucleotide of claim 12 or 13 or a vector of claim 14.

16. A method for preparing an antibody that binds to an extracellular localized epitope of Hsp70 on tumor cells, or a functional fragment or immunoglobulin chain(s) thereof, said method comprising

(a) culturing the cell of claim 15; and

(b) isolating said antibody or functional fragment or immunoglobulin chain(s) thereof from the culture.

17. An antibody, an immunoglobulin chain thereof or a binding fragment thereof encoded by a polynucleotide of claim 12 or 13 or obtainable by the method of claim 16.

18. A bi- or multifunctional molecule that comprises the binding domain of an antibody of any one of claims 1 to 9, an immunoglobulin chain thereof or a binding fragment thereof which binds cell surface membrane-bound heat shock protein (HSP), and at least one further functional domain.

19. The bi- or multifunctional molecule of claim 18, which is bispecific molecule.

20. The bispecific molecule of claim 19, which is a bispecific antibody.

21. The bi- or multifunctional molecule of any one of claims 18 to 20, wherein said further functional domain is a cytotoxic agent or a label.

22. A composition comprising the antibody of any one of claims 1 to 9 or 17, the bi- or multifunctional molecule of any one of claims 18 to 21, the polynucleotide of claim 12 or 13, the vector of claim 14 or the cell of claim 15.

23. The composition of claim 22 which is a pharmaceutical composition and further comprises a pharmaceutically acceptable carrier.

24. The pharmaceutical composition of claim 23 further comprising an immune stimulatory agent.

25. A diagnostic composition comprising the antibody of any one of claims 1 to 9 or 17, the bi- or multifunctional molecule of any one of claims 18 to 21, the polynucleotide of claim 12 or 13, the vector of claim 14 or the cell of claim 15; and optionally reagents conventionally used in immuno or nucleic acid based diagnostic methods.

26. A method of determining a tumor comprising assaying cells in a sample from a patient with the antibody of any one of claims 1 to 9 or 17 or the bi- or multifunctional

molecule of any one of claims 18 to 21, wherein the presence or increased amount of extracellular localized Hsp70 is indicative for the tumor.

27. The method of claim 26 comprising an immunological step.

28. Use of the antibody of any one of claims 1 to 9 or 17 or the bi- or multifunctional molecule of any one of claims 18 to 21 for the preparation of a pharmaceutical composition for the treatment of a tumor or modulating an immune response.

29. A method of treating a tumor or modulating the immune response in a subject in need thereof, comprising administering to the subject a therapeutically effective amount of the antibody of any one of claims 1 to 9 or 17 or the bi- or multifunctional molecule of any one of claims 18 to 21.

30. The use of claim 28 or the method of claim 29, wherein said pharmaceutical composition is designed to be administered intravenously, intramuscularly, subcutaneously, intraperitoneally, or as an aerosol.

31. The use of claim 28 or 30 or the method of any one of claims claim 26, 27, 29 or 30, wherein said tumor is selected from the group consisting of carcinomas of lung, colorectum, pancreas, larynx, stomach, head, neck, breast, ovaries, uterine cervix, liver, peripheral and central nervous system, sarcomas, chronic myeloic leukemia (CML), acute myeloic leukemia (AML), acute lymphatic leukemia (ALL), non Hodgkin Lymphoma (NHL), myeloproliferative syndrome (MPS), myelodysplastic syndrome (MDS), plasmocytoma, melanoma and metastatic tumors.

32. The use of claim 28 or 30 or the method of claim 29 or 31, wherein said disorder related to an immune response relates to a viral infection, bacterial infection, rheumatoid arthritis, lupus erythematodes, asthma bronchiale.

33. A method of targeting a therapeutic and/or diagnostic agent to a cell which expresses an extracellular localized epitope of Hsp70 on the cell surface, comprising administering to the subject a therapeutically effective amount of a bi- or multifunctional molecule of any one of claims 19 to 22.

34. Use of a bi- or multifunctional molecule of any one of claims 18 to 21 for targeting a therapeutic and/or diagnostic agent to a cell which expresses an extracellular localized epitope of Hsp70 on the cell surface.

35. The method of claim 33 or the use of claim 34, wherein said cell is a tumor cell or a cell related to an immune or infectious disease.

36. A method for obtaining monoclonal antibodies or binding fragments thereof comprising subjecting a sample comprising an immunoglobulin of interest to the purification protocol as described in example 2.

37. The method of claim 36, wherein said sample comprises or is derived from a supernatant obtained from hybridomas.

38. The method of claim 37, wherein said hybridoma is a hybridoma as defined in claim 10 or 11.

39. An antibody or binding fragment thereof obtainable by the method of any one of claims 36 to 38.